

AMENDMENTS TO THE CLAIMS:

This listing of claims that follows is provided as a courtesy. No changes have been made since the previous amendment.

1. (Original) A method for preparing an area for fabrication of a metal gate electrode with multiple work functions, the method comprising the steps of:

depositing a material having a first work function;

forming a conductive hard mask including at least one of a metal containing conductor and a metal silicide over the material;

using a photoresist mask to remove the conductive hard mask from an area for a device having a second, different work function selective to the material; and

removing the photoresist mask, leaving the conductive hard mask for use in removing the material from the area and inclusion in the metal gate electrode.

2. (Original) The method of claim 1, wherein the metal silicide includes one of tungsten silicide (WSi), titanium silicide (TiSi_x), tantalum silicide (TaSi_x), nickel silicide (NiSi), cobalt silicide (CoSi_x), and the metal containing conductor includes one of tantalum nitride (Ta₂N) and tantalum silicon nitride (TaSiN).

3. (Original) The method of claim 1, wherein the conductive hard mask has a thickness of no less than 10 Å and no greater than 500 Å.

4. (Original) The method of claim 3, wherein the conductive hard mask has a thickness of no less than 20 Å and no greater than 250 Å.

5. (Original) The method of claim 1, wherein the photoresist removing step includes conducting a wet etch using a chemistry including at least one of sulfuric acid (H_2SO_4) and peroxide (H_2O_2).

6. (Previously Presented) A method of forming a gate electrode, the method comprising the steps of:

forming a gate dielectric;

depositing a first metallic conductor having a first work function;

depositing a conductive hard mask on the first metallic conductor including at least one of a metal containing conductor and a metal silicide;

removing the conductive hard mask from an area for a particular device type using a photoresist mask selective to the first metallic conductor;

removing the photoresist mask;

removing the first metallic conductor in the area with a remaining portion of the conductive hard mask protecting the first metallic conductor;

depositing a conductor; and

forming the gate electrode including the remaining portion of the conductive hard mask.

7. (Original) The method of claim 6, wherein the conductor depositing step includes depositing a second metallic conductor having a different, second work function, and depositing a silicon-containing conductor.
8. (Original) The method of claim 6, wherein the conductor depositing step includes depositing a silicon-containing conductor.
9. (Original) The method of claim 8, wherein the first metallic conductor includes a p-type metal, and the silicon-containing conductor is highly doped n-type.
10. (Original) The method of claim 6, wherein the metal silicide includes one of tungsten silicide (WSi), titanium silicide (TiSi_x), tantalum silicide (TaSi_x), nickel silicide (NiSi), cobalt silicide (CoSi_x), and the metal containing conductor includes one of tantalum nitride (Ta₂N), tantalum silicon nitride (TaSiN).
11. (Original) The method of claim 6, wherein the conductive hard mask has a thickness of no less than 10 Å and no greater than 500 Å.
12. (Original) The method of claim 11, wherein the conductive hard mask has a thickness of no less than 20 Å and no greater than 250 Å.

13. (Original) The method of claim 6, wherein the conductive hard mask removing step includes conducting one of a wet etch and a reactive ion etch.

14. (Original) The method of claim 6, wherein the photoresist mask removing step includes conducting

a wet etch using a chemistry including at least one of sulfuric acid (H_2SO_4) and peroxide (H_2O_2).

15. (Original) The method of claim 14, wherein the first metallic conductor removing step includes using the wet etch.

16. (Previously Presented) A method of forming a metal gate electrode with multiple work function, the method comprising the steps of:

depositing a dielectric on a substrate;

depositing a first metallic conductor having a first work function over the dielectric;

depositing a conductive hard mask on the first metallic conductor including at least one of a metal containing conductor and a metal silicide;

removing the conductive hard mask from an area for a particular device type using a photoresist mask;

removing the photoresist mask to a remaining portion of the conductive hard mask;

removing the first metallic conductor in the area using the remaining portion of the

conductive hard mask to protect the first metallic conductor;

depositing a second metal having a second, different work function in the area;

depositing a silicon-containing conductor over the first and second metals; and

forming the metal gate electrode including the remaining portion of the conductive hard mask.

17. (Original) The method of claim 16, wherein the metal silicide includes one of tungsten silicide (WSi), titanium silicide (TiSi_x), tantalum silicide (TaSi_x), nickel silicide (NiSi), cobalt silicide (CoSi_x), and the metal containing conductor includes one of tantalum nitride (TaN), tantalum silicon nitride (TaSiN).

18. (Original) The method of claim 16, wherein the conductive hard mask has a thickness of no less than 10 Å and no greater than 500 Å.

19. (Original) The method of claim 18, wherein the conductive hard mask has a thickness of no less than 20 Å and no greater than 250 Å.

20. (Original) The method of claim 16, wherein the conductive hard mask removing step includes conducting one of a wet etch and a reactive ion etch.